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TTS 58 COMPANDERED CIRCUIT ADAPTER

MODEL TTS 58AXCA
COMPANDORED CIRCUIT ADAPTER
FOR IMPULSE NOISE COUNTERS

Preliminary Draft Copy

TTS-58AXCA

NORTHEAST ELECTRONICS CORPORATION
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MODEL TTS 58AXCA
COMPANDORED CIRCUIT ADAPTER
FOR IMPULSE NOISE COUNTERS

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NORTHEAST ELECTRONICS CORPORATION
P.O. Box 649 - Concord, N. H.
03301

MODEL TTS 58AXCA
COMPANDORED CIRCUIT ADAPTER FOR IMPULSE NOISE COUNTERS

SECTION 1

DESCRIPTION AND SPECIFICATIONS

1.1 GENERAL DESCRIPTION

1.2 The Model TTS 58AXCA is an accessory for the Model TTS 58A Impulse Noise Counter, designed to electrically disable the compandor circuit on carrier channels while performing impulse noise tests. This accessory may be contained in a lid to fit the TTS 58A or in a separate case (Model TTS 58ACA) for use with other impulse noise counters such as the Western Electric Company 6A.

1.3 The unit consists basically of the following circuits:

a. Oscillator - A stable RC oscillator with a fixed frequency of 2750 Hz. A frequency adjust vernier control permits a fine adjustment from 2725 Hz to 2775 Hz. An output switch with a fixed attenuator selects an output level of -10 dBm or -26 dBm at 600 or 900 ohms impedance.

b. Filters - A 2750 Hz notch filter with adjustable controls to permit setting of a null of 2725, to 2775 to -40 dB. A voice filter is also included.

c. Switching Circuit - A function switch connects the input of the line under test to the oscillator, input of the noise counter, or to another external measuring circuit or dial.

1.4 The unit operates from 48 volts DC or internal batteries.

SECTION 2

OPERATING INSTRUCTIONS

2.1 CONTROLS AND TERMINALS

a. 48V Jack - Connects to the set when using external 48 volt battery. This accepts a 310 type plug with the tip negative and the sleeve ground.

b. LINE Jack - Accepts a 310 type plug with tip-ring for connection to the facility under test.

c. EXT Jack - Accepts a 310 type plug with tip-ring for connection to external circuits such as a dial.

d. MEASURE Jack - Accepts a 310 type plug with tip-ring for connection to the associated impulse noise counters LINE jack.

e. FILTER-IN Jack - Accepts a 310 type plug with tip-ring for connection to the filter-in binding post of the associated impulse noise counter.

f. FILTER-OUT Jack - Accepts a 310 type plug with tip-ring for connection to the filter-out binding post of the associated impulse noise counter.

g. SLEEVE binding post - For connection of the proper potential when sleeve control for holding circuits is required.

h. GND Binding Post - Connects to chassis and circuit common.

i. BATT TEST + - MIN 12V Pin jacks - Connects to a voltmeter for check of internal battery voltage.

j. FREQUENCY ADJUST Control - Adjusts the frequency of the internal 2750 Hz oscillator.

k. OUTPUT - A four position rotary switch which selects 600Ω or 900Ω output impedance of oscillator and output levels of -10 dBm or -26 dBm.

l. FUNCTION - A four position rotary switch which selects the various connections to the LINE, MEASURE and EXT jacks.

m. HOLD ON/OFF.- Toggle switch that switches an inductor across the tip and ring of the LINE jack.

n. POWER ON/OFF - Toggle switch which controls operating power to the set.

o. FILTER 2750 Hz NULL - Controls to adjust the R and C values of the 2750 Hz slot filter for a maximun null.

2.2 OPERATION

2.3 Check Battery. This need not be performed for each test, as normally the batteries will provide long life. It should be done when the condition of the batteries is unknown or questionable or at the beginning of a long series of tests.

a. Connect a DC voltmeter to the two BATT TEST pin jacks. Polarities are indicated.

b. Place POWER ON and place a 310 plug in LINE jack.

c. Note voltmeter readings. Fresh batteries will read 18 volts (or slightly more). Aged batteries will have less voltage.

d. If the voltmeter reads less than 12 volts, the batteries should be replaced. (Two Eveready 2356N or equivalent).

2.4 INITIAL PROCEDURE

a. Connect one end of a 310 type tip-ring plug ended cord into the LINE jack and the other end to the circuit under test.

b. Connect one end of a 310 type tip-ring plug ended cord into the MEASURE jack and the other end into the LINE jack of the impulse noise counter.

c. Connect a dial to the EXT jack if a dialed up connection is required.

d. With the five ended special cord provided with the set, place the red and black 310 type plugs in the FILTER IN and OUT jacks respectively of the TTS 58AXCA. Connect the yellow, red and black banana plugs on the other end to the external filter binding posts GND, IN and OUT respectively on the associated impulse noise counter.

e. Refer to the impulse noise counter manual for the proper calibration and switch settings.

f. Turn POWER ON.

2.5 FILTER ADJUSTMENT PROCEDURE

a. With a 2750 Hz tone present at the LINE jack of the TTS 58AXCA and the connections as described in Paragraph 2.4, remove the black shell 310 plug in the FILTER OUT jack and insert a 310 plug ended high impedance test receiver such as an NEC TN45 or equivalent.

b. Adjust the NULL controls alternately until a minimum level of tone is detected in the test receiver.

c. Replace the test receiver plug with the black shell plug removed in Step a.

2.6 TO SEND 2750 Hz

a. With the FUNCTION switch in the LINE SEND position, set the OUTPUT switch to the desired impedance and output level. The 2750 Hz tone should be present on the tip and ring of the LINE jack. The EXT jack may be used to send the tone when the FUNCTION switch is in the LINE MEAS SEND EXT position.

NOTE

The FREQ ADJ control has been factory set at 2750 Hz $\pm$2% and should not be readjusted without the aid of a frequency counter such as the NEC TTS 80A or equivalent.

2.7 TO DIAL AND HOLD CIRCUIT.

a. Connect a dialable trunk or circuit to LINE jack.

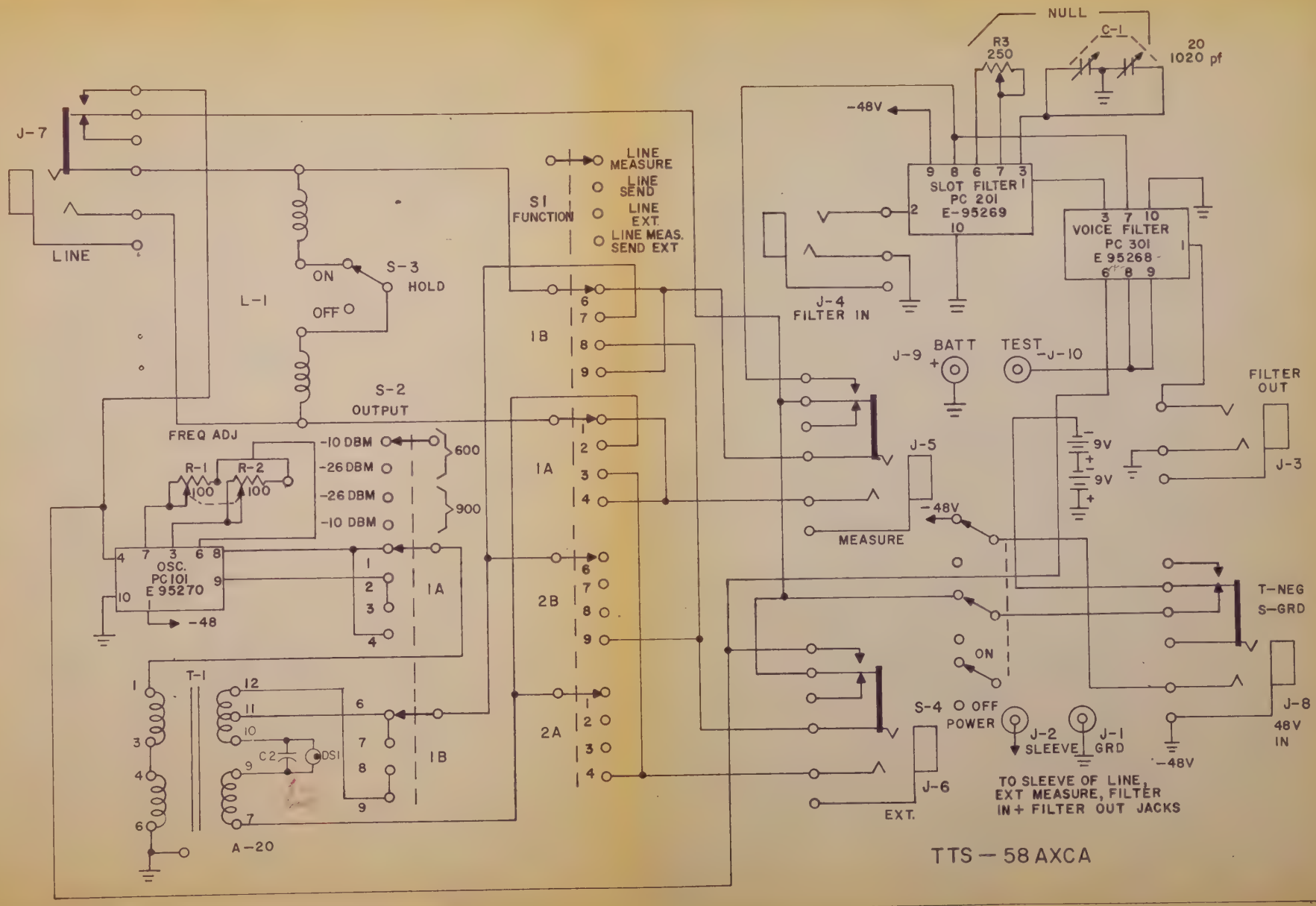
b. Connect 310 type plug ended dial to EXT jack.

c. Turn HOLD toggle switch to OFF position.

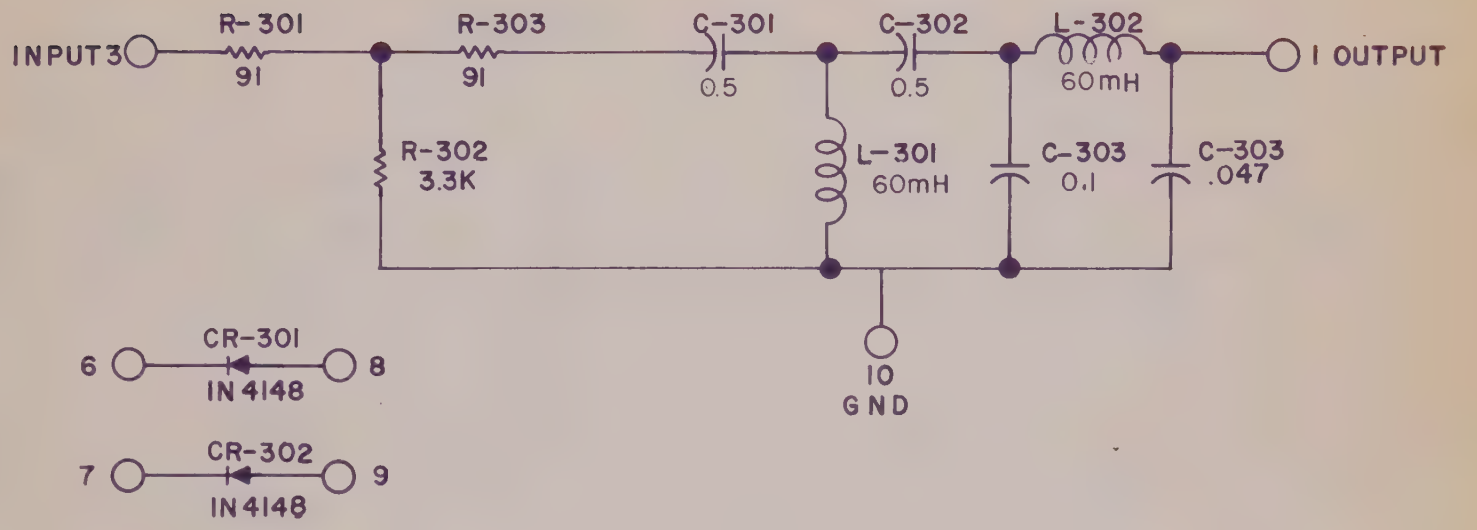
d. Turn FUNCTION switch to LINE EXT position.

e. Dial desired number.

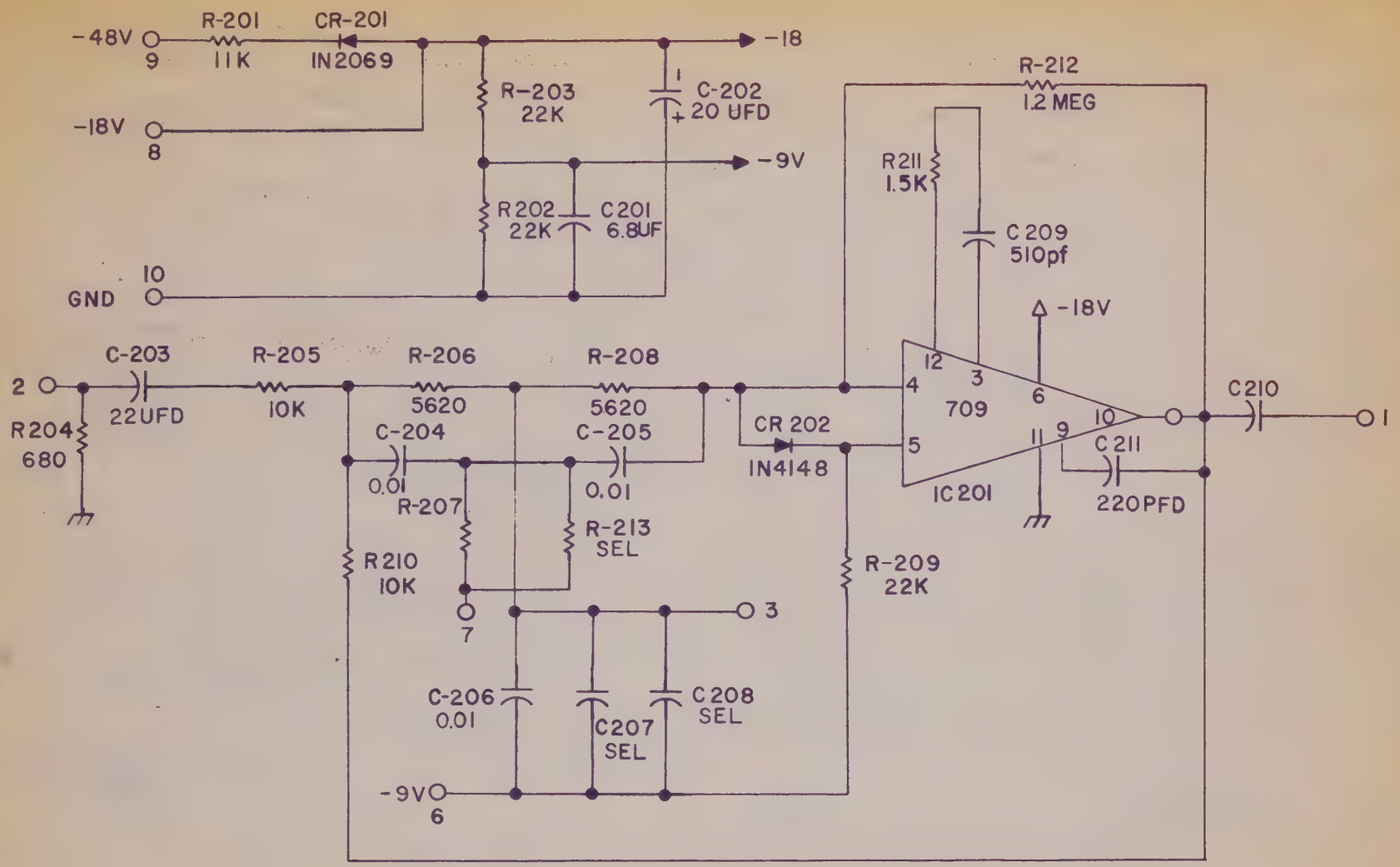
f. Turn HOLD toggle switch to ON position. The FUNCTION switch may then be turned to other positions without dropping dialed up connection.


NULL
C-1
R3
250
20
1020 pf
-48V
J-7
LINE
LINE MEASURE
LINE SEND
LINE EXT.
LINE MEAS. SEND EXT
S1 FUNCTION
ON
S-3
HOLD
OFF
L-1
S-2
OUTPUT
FREQ ADJ
-10 DBM
-26 DBM
-26 DBM
-10 DBM
600
900
R-1
100
R-2
100
OSC.
PC 101
E 95270
-48
T-1
A-20
C2
DS1
1A
1B
2A
2B
9 8 6 7 3 1
SLOT FILTER
PC 201
E-95269
10
2
J-4
FILTER IN
3 7 10
VOICE FILTER
PC 301
E 95268
6 8 9
1
J-9
BATT
+
TEST
J-10
FILTER OUT
J-3
J-5
MEASURE
-48V
9V
9V
T-NEG
S-GRD
ON
S-4
OFF
POWER
J-2
SLEEVE
J-1
GRD
J-8
48V
IN
-48V
J-6
EXT.
TO SLEEVE OF LINE, EXT MEASURE, FILTER IN+ FILTER OUT JACKS
TTS — 58 AXCA

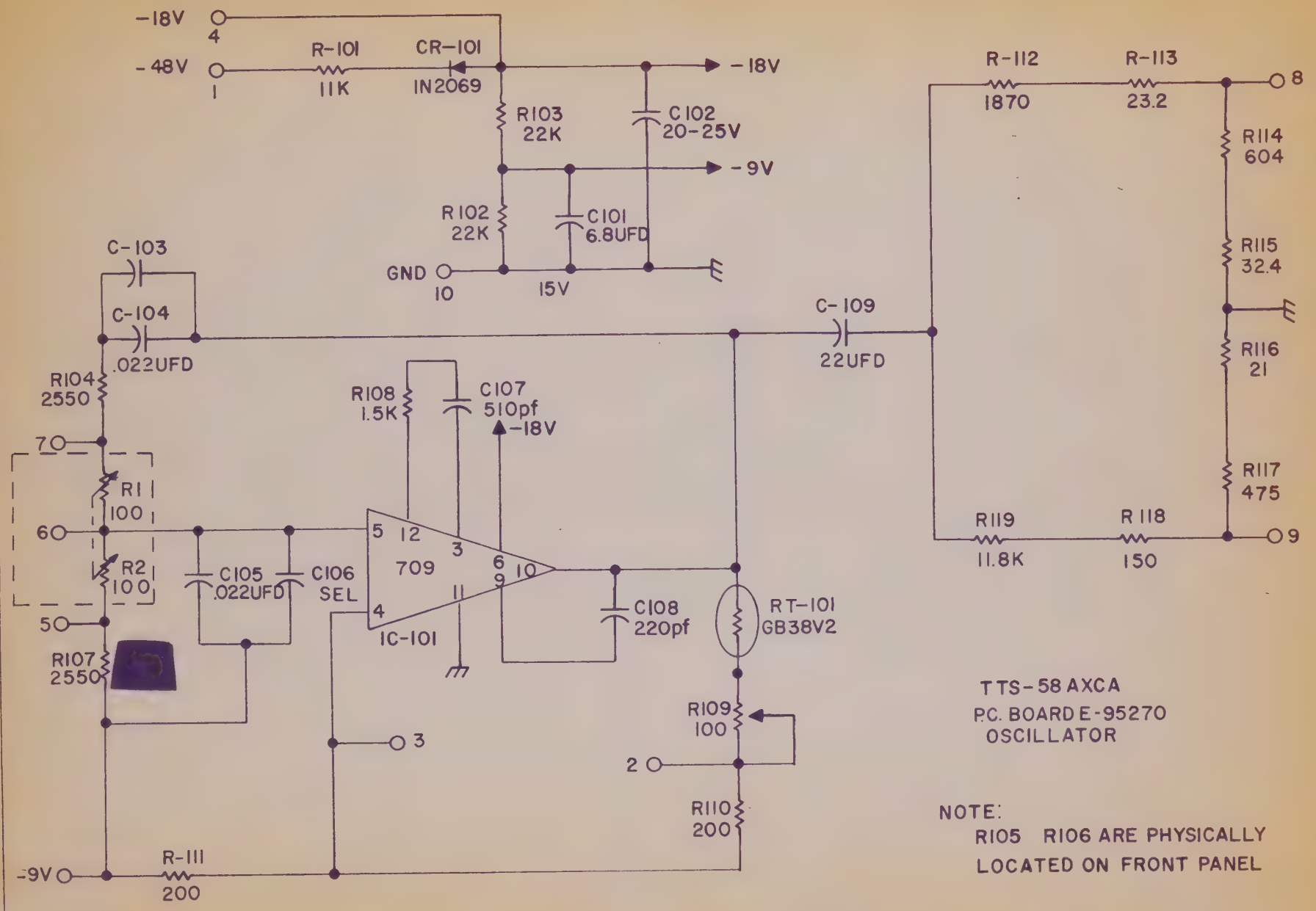
REVISIONS			
NO.	DESCRIPTION	DATE	APPROVAL



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±½° MAT'L — FINISH — ETCH AND IRIDITE PAINT — FEDERAL SPEC. 595 COLOR 26492 CASES — 26152 GREY TEXTURED SCREEN PER —	DRAWN BY GEO. FOSTER DATE 8/2/68 APPD ISSUED APPROVED / DATE ENGR MFG MATL	TTS-58AXCA P.C. BD. E-95268 VOICE FILTER SCALE	NORTHEAST ELECTRONICS CORP. CONCORD, N. H. U.S.A. PROJ. NO. SIZE A / NO. / ISSUE SHEET OF



TTS - 58AXCA
P.C. BD. E-95269
SLOT FILTER


-18V
4
-48V
1
R-101
11K
CR-101
IN2069
-18V
R103
22K
C102
20-25V
-9V
R102
22K
C101
6.8UFD
GND
10
15V
C-103
C-104
.022UFD
C-109
22UFD
R-112
1870
R-113
23.2
8
R114
604
R115
32.4
R116
21
R117
475
R119
11.8K
R 118
150
9
R104
2550
7
R1
100
6
R2
100
5
R107
2550
R108
1.5K
C107
510pf
-18V
C105
.022UFD
C106
SEL
709
IC-101
C108
220pf
RT-101
GB38V2
3
R109
100
2
R110
200
-9V
R-111
200
TTS-58 AXCA
P.C. BOARD E-95270
OSCILLATOR
NOTE:
R105 R106 ARE PHYSICALLY
LOCATED ON FRONT PANEL

TTS 58AXCA Model

Addendum Sheet #1

Section 5 - parts list - page 5-7

ADD:	C2	C: 2.2μF 100V non-polar	Whale*	11-.312-212-100-8NA
	DS1	Lamp	71744	NE2

* No number listed in Manufacturers Handbook.

SECTION 5

ELECTRONIC PARTS LIST

5.1 INTRODUCTION. The following pages contain the parts list for the TTS 58AXCA.

5.2 FSCM Code Numbers. The Federal Supply Code of Manufacturers of each part. A list of codes and their respective manufacturers is given on page 5-8.

5.3 Abbreviations used in the Parts List.

C - capacitor
R - resistor
S - switch
Ind - inductor
Pot - potentiometer
elect- electrolytic
sel val - selected value
var - variable
blk - black

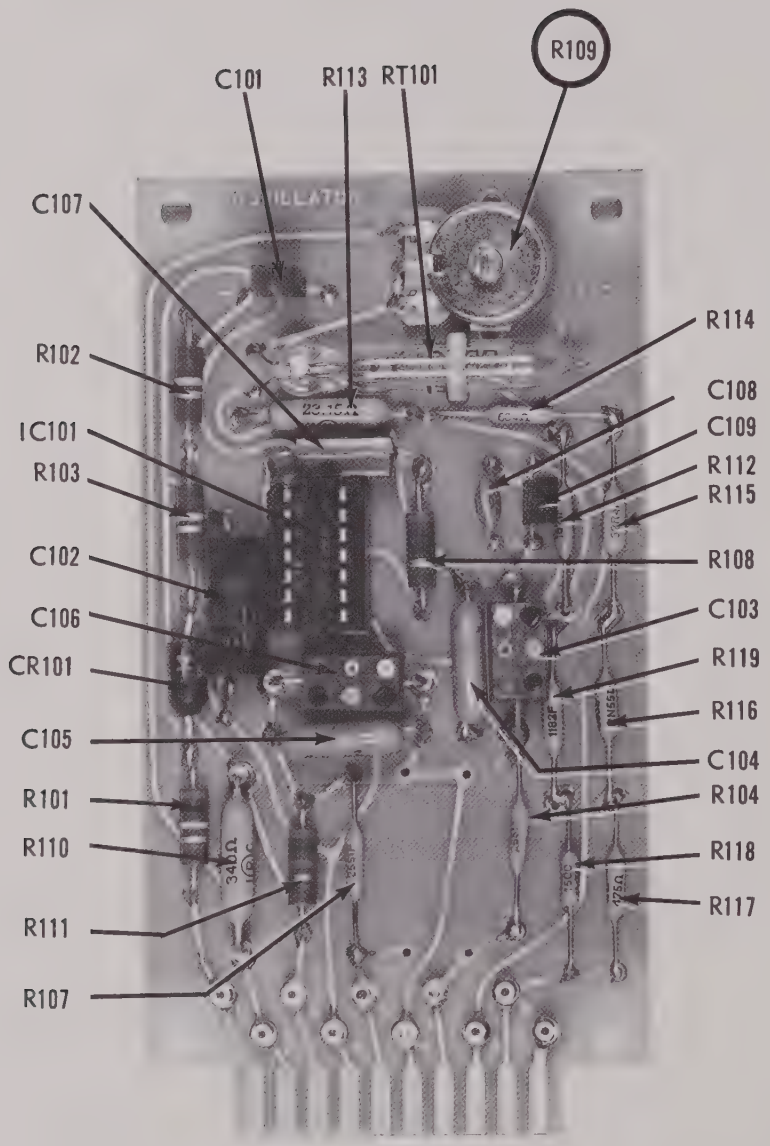


Fig. 5-1 Oscillator PC Board E95270

Oscillator PC Board E95270

Ref Desig.	Description	Manufacturer (FSCM Code No)	Part Number
C101	C: 6.8μF 15 Vdc elect	05397	K6R8W15K
C102	C: 20μF 25 Vdc elect	02567	APD-046
C103	C: sel val		
C104	C: 0.022μF 80 Vdc	13606	192P
C105	C: 0.022μF 80 Vdc	13606	192P
C106	C: sel val		
C107	C: 510pf	84171	CM
C108	C: 220pf 1 Kv	00409	CE-221
C109	C: 22μF 6 Vdc elect	05397	K22W6K
R101	R: 11K 5% ½W	01121	
R102	R: 22K 10% ½W	01121	
R103	R: 22K 10% ½W	01121	
R104	R: 2550Ω 1% 1/8W	07716	CEATO
R107	R: 2550Ω 1% 1/8W	07716	CEATO
R108	R: 1500Ω 10% ½W	01121	
R109	Pot: 100Ω	71450	UPE200RE-1
R110	R: 200Ω 1% 1/8W	07716	CEATO
R111	R: 200Ω 1% 1/8W	07716	CEATO
R112	R: 1870Ω 1% 1/8W	07716	CEATO
R113	R: 23.2Ω 1% 1/8W	01121	
R114	R: 604Ω 1% 1/8W	01121	
R115	R: 32.4Ω 1% 1/8W	01121	
R116	R: 21Ω 1% 1/8W	01121	
R117	R: 475Ω 1% 1/8W	01121	
R118	R: 150Ω 1% 1/8W	01121	
R119	R: 11800Ω 1% 1/8W	01121	
CR101	Diode	80368	1N2069
RT101	Thermistor	15801	GB38V2
IC101	I.C. Operational Amplifier	12065	TOA-2709P

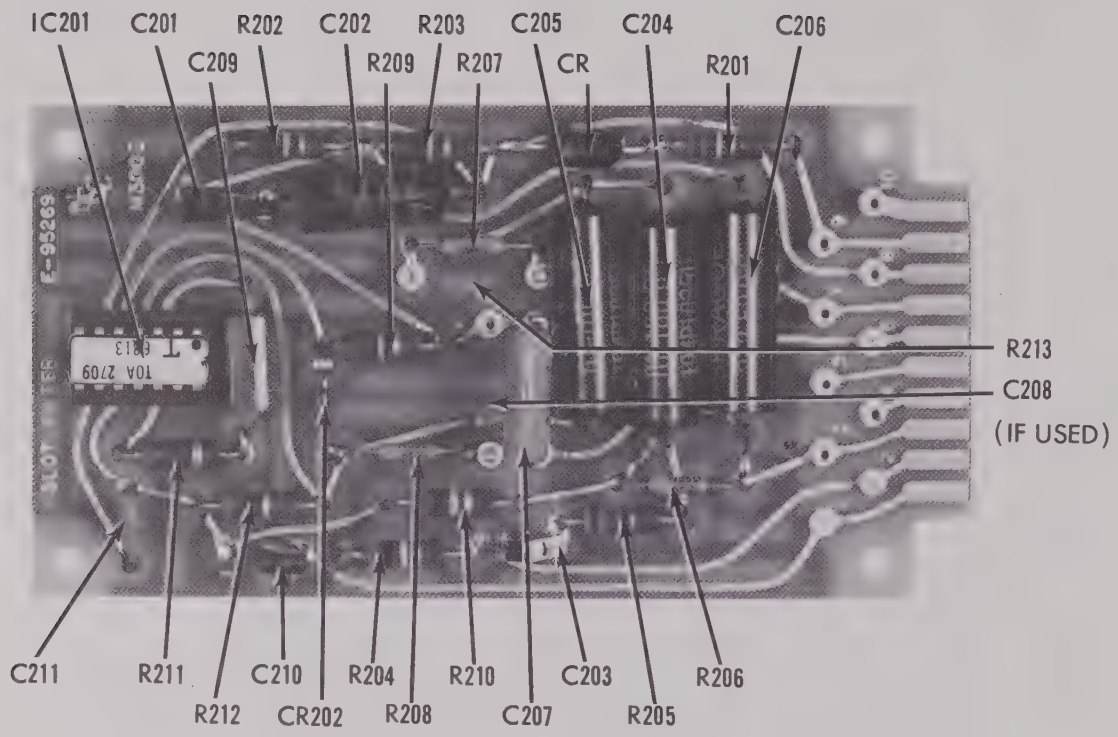


Fig. 5-2 PC Board E95269

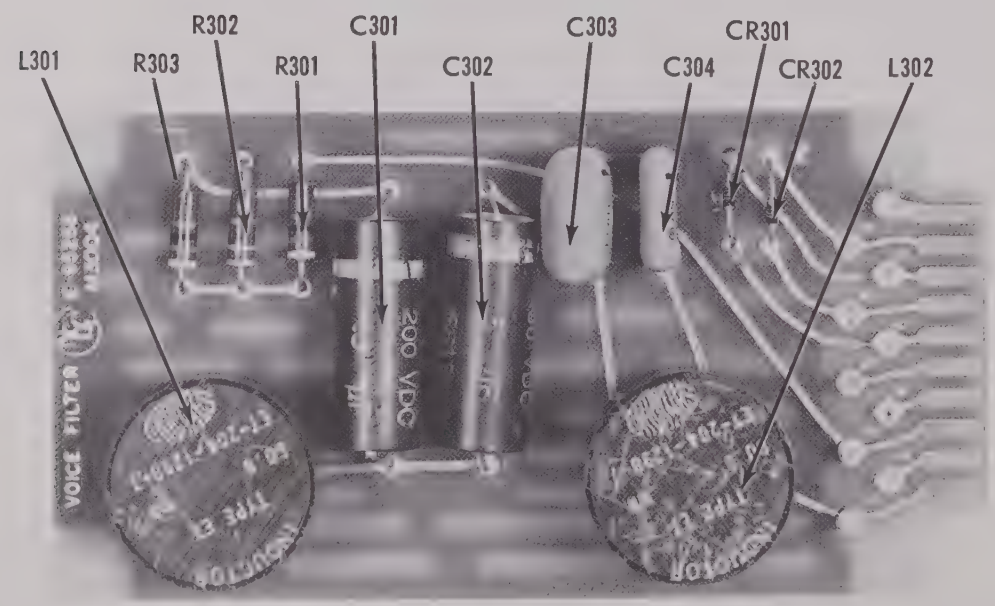


Fig. 5-3 PC Board E95268

Slot Filter PC Board E95269

Ref Desig.	Description	Manufacturer (FSCM Code No)	Part Number
C201	C: 6.8μF 15 Vdc	05397	K6R8W15K
C202	C: 20μF 25 Vdc	02567	APD-046
C203	C: 22μF 6 Vdc	05397	K22W6K
C204	C: 0.01μF 100 Vdc	13606	194P10351
C205	C: 0.01μF 100 Vdc	13606	194P10351
C206	C: 0.01μF 100 Vdc	13606	194P10351
C207	C: sel val	13606	192P
C208	C: sel val	13606	192P
C209	C: 510 pf	84171	CM
C210	C: 22μF 6 Vdc	05397	K22W6K
C211	C: 220pf 1 kV	00409	CE-221
R201	R: 11K 5% ½W	01121	
R202	R: 22K 10% ½W	01121	
R203	R: 22K 10% ½W	01121	
R204	R: 680Ω 5% ½W	01121	
R205	R: 10K 5% ½W	01121	
R206	R: 5620Ω 1% 1/8W	07716	CEATO
R207	R: 2490Ω 1% 1/8W	07716	CEATO
R208	R: 5620Ω 1% 1/8W	07716	CEATO
R209	R: 22K 10% ½W	01121	
R210	R: 10K 5% ½W	01121	
R211	R: 1500Ω 10% ½W	01121	
R212	R: 1.2MΩ 5% ½W	01121	
R213	R: sel val		
CR201	Diode	80368	1N2069
CR202	Diode	12065	1N4148
IC201	I. C. Operational Amplifier	12065	TOA-2709P

Voice Filter PC Board E95268

C301	C: 0.5μF 200 Vdc	00656	P8292ZN12
C302	C: 0.5μF 200 Vdc	00656	P8292ZN12
C303	C: 0.1μF 100 Vdc	13606	225PW
C304	C: 0.047μF 100 Vdc	13606	225PW
R301	R: 91Ω 5% ½W	01121	
R302	R: 3300Ω 5% ½W	01121	
R303	R: 91Ω 5% ½W	01121	
CR301	Diode	12065	1N4148
CR302	Diode	12065	1N4148
L301	Ind: 60 mH choke	53021	ET-204-1290-7
L302	Ind: 60 mH choke	53021	ET-204-1290-7

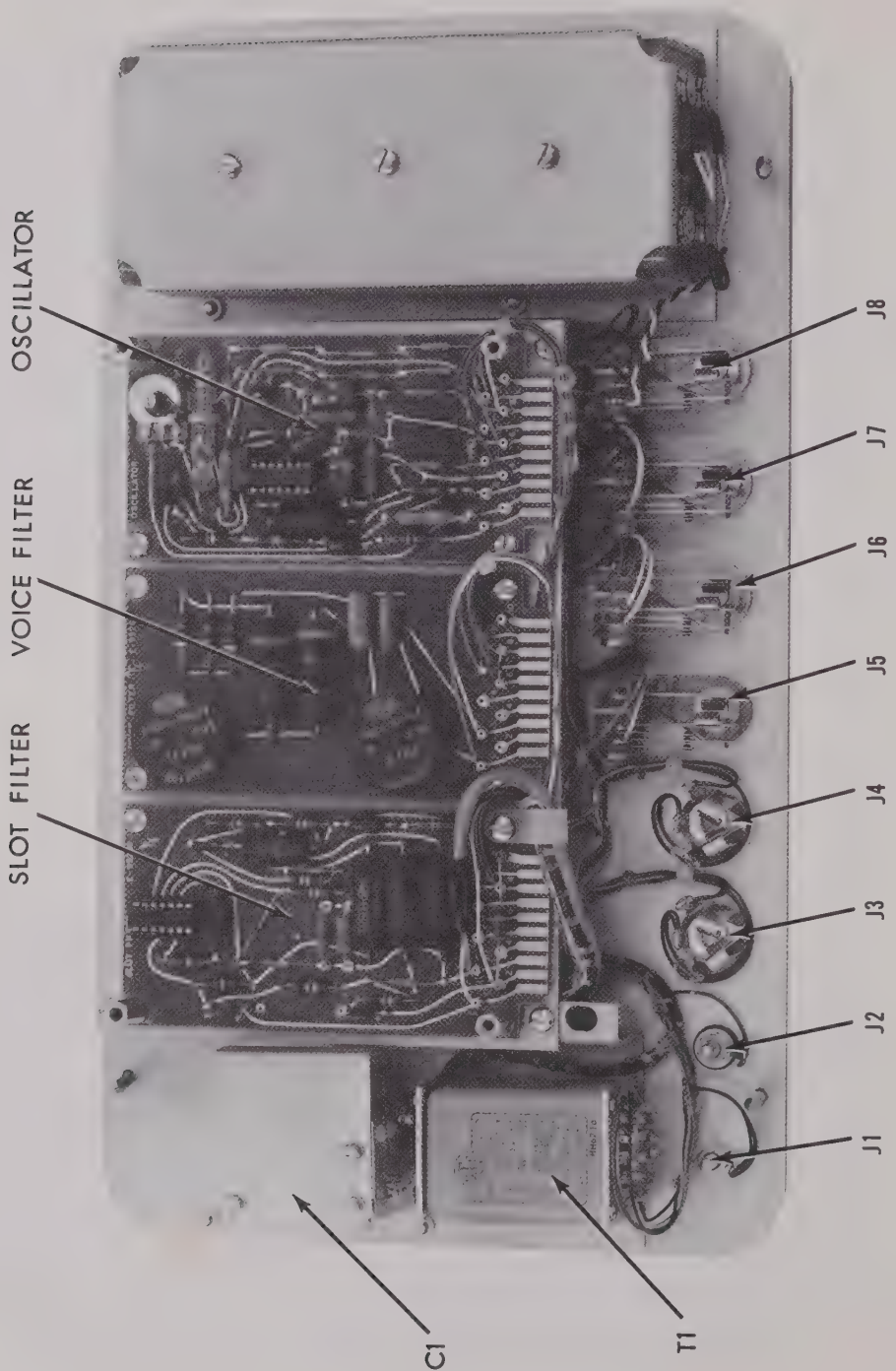


Fig. 5-4 Main Assembly

Main Assembly

Ref Desig.	Description	Manufacturer (FSCM Code No)	Part Number
C1	C: var 20-1020 pf	24972	359/2
R1	R: 100Ω ganged dual pot.	12697	CM31856
R2	R: 100Ω ganged dual pot.	12697	CM31856
R3	R: 250Ω Type AB pot.	71590	HMS-250
S1	S: rotary 2 deck	71590	PA-1013
S2	S: rotary 2 deck	71590	PA-1003
S3	S: SP/DT toggle switch	09353	7101
S4	S: DP/DT toggle switch	09353	7201
J1	Binding Post	83330	137SP
J2	Binding Post - blk	81073	29-1B
J3	Jack	82389	C-55B-5F
J4	Jack	82389	C55B-5F
J5	Jack	82389	C-55B-5F
J6	Jack	82389	C-55B-5F
J7	Jack	82389	C-55B-5F
J8	Jack	82389	C-55B-5F
J9	Blk Pin jacks	49956	TJ-105BL
J10	Blk Pin jacks	49956	TJ-105BL
T1	Transformer A-20	80223	GR8-15
L1	Ind: hold coil	06819	TTS 58AXCA-L1

TTS 58AXCA

LIST OF MANUFACTURERS

Code No.	Manufacturer
00409	CRC Crose International Incorporated
00656	Aerovox Corporation
01121	Allen Bradley Company
02567	International Electronics Industries
05397	Union Carbide Corporation*
06819	Northeast Electronics Corporation
07716	IRC
09353	International Electric Industries
12065	Transitron
12697	Clarostat
13606	Sprague
15801	Fenwall
24972	Telefunken
49956	Raytheon
53021	Sangamo Electric
71450	CTS Corporation
71590	Centralab
80223	UTC
80368	Sylvania
81073	Grayhill
82389	Switchcraft
83330	H. H. Smith
84171	Arco

* Formerly KEMET

MODEL TTS 58AXCA MODIFICATION FOR DC BLOCKING

1. Loosen 4 screws securing unit in case and remove.
2. Locate transformer on lower left bottom side of unit.
3. Remove 2 mounting screws at top right and bottom right side of the transformer.
4. Mount small component board furnished with these instructions, using the mounting screws and stand offs. Position component board with slate and brown wires on the top side.
5. Remove straps from terminals 9 and 10 of the transformer.
6. Connect slate wire to terminal 9.
7. Connect brown wire to terminal 10.
8. Replace unit in case.

JWB:it
August 26, 1968

NORTHEAST ELECTRONICS CORPORATION
Airport Road
Concord, New Hampshire

PRELIMINARY DESCRIPTION

MODEL TTS 58AXCA COMPANDORED CIRCUIT ADAPTER
FOR IMPULSE NOISE COUNTERS

The Model TTS 58AXCA is an accessory for the Model TTS 58A Impulse Noise Counter designed to electrically disable the compandor circuit on carrier channels while performing impulse noise tests. This accessory may be contained in a lid to fit the TTS 58A or in a separate case for use with other impulse noise counters such as the Western Electric Company 6A.

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(b) Filters -- A 2750 Hz notch filter with adjustable controls to permit setting of a null of 2725 to 2775 to -40 db. A voice filter is also included.

(c) Switching Circuit -- A function switch connects the input of the line under test to the oscillator, input of the noise counter, or to another external measuring circuit or dial.

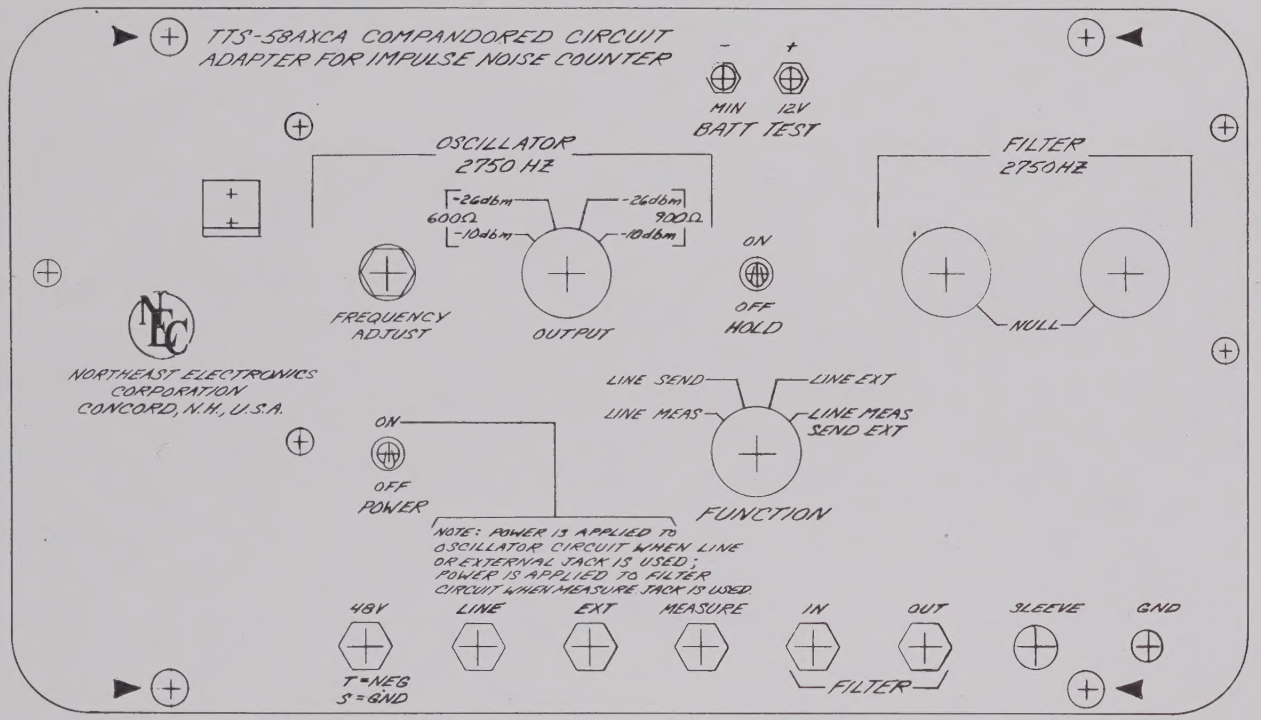
The unit operates from 48 volts DC or internal batteries.

A front panel drawing is attached.

The TTS 58AXCA is priced at $260.00 when ordered with a TTS 58A and $275.00 when ordered separately.

PGB:it
March 1968

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVAL
1	ADDED PWR SW # BRACKET TO NOTE ADDED LINE PREFIX TO FUNCTION SW.	2-20-68	RCS/A.B.



NOTE
SCREEN TO BE IN BLACK

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±½° MAT'L — SEE DET C-61279 FINISH — ETCH AND IRIDITE PAINT — FEDERAL SPEC. 595 COLOR 26492 CASES — 26152 GREY TEXTURED SCREEN PER —	DRAWN BY RE SAWYER JR DATE 17 JAN. 1967 APPD. ISSUED. APPROVED / DATE ENGR. RCS MFG. MATL.	SILK SCREEN COVER FRONT PANEL TTS-58AXCA SCALE	NORTHEAST ELECTRONICS CORP. CONCORD, N. H. U.S.A. PROJ. NO. C-1267 SIZE C NO. 61280 ISSUE 1 SHEET OF

57002